PERIODICAL SWARMING OF CELERIO LINEATA IN ECUADOR.

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Dr. R. C. Murphy, of the American Museum of Natural History, early this spring brought back from Point Santa Elena, Ecuador, a good series of the hawkmoth *Celerio lineata,* of which he reports countless numbers attracted to lights at night. He also learned that the swarming of this moth recurs at regular intervals, but only coincident with the wet years in Ecuador, usually every seventh year, but in this case in the sixth year. Inhabitants of the region believe the insect to be non-existent during the long succession of dry years and its sudden appearance in such great abundance with the advent of a wet year has impressed them as something very mysterious.

Two theories suggest themselves as most likely in explaining this phenomenon. The first is that of estivation. There are records from arid countries citing pupal periods covering three and four years. For example, *Agapema galbina* from Brownsville, Texas, of which a cocoon cluster comprising several hundred was obtained by the Brooklyn Museum, produced moths every year, but in diminishing numbers until the fourth year. From the extremely dry parts of the West coast of South America it would not be surprising to learn of still more prolonged periods of estivation.

The second theory is that of migration. *Celerio lineata* is one of the most widely distributed species of all hawkmoths. It ranges through both South and North America from Cape Horn to subarctic regions and is said to occur also in Europe. It is considered the commonest of all North American Sphingidae and appears to be equally well at home on alpine meadows above timber-line and in flower fields near sea-level, with this difference, however, that in cold climes it is active during sunshine while in warm climes it prefers the hour after sunset and before sunrise. Swarms of the moths have been reported from steamers several hundred miles out at sea.

In temperate zones the insect is two-brooded; in tropical and sub-tropical climates breeding is continuous, excepting in dry seasons. The large, vari-colored green and black larvae are quite plentiful in some years throughout the Eastern States, feeding

on *Portulaca* and evening primrose in agricultural fields and gardens. In other years they are encountered rather sparingly due to the attacks of tachinid flies which prevent successive years of abundance. At the meeting of the Pacific Coast Division of the American Association for the Advancement of Science held at Salt Lake City during June, 1922, the writer witnessed what might be called a migration of the larvae. With nothing suitable for food left on the neighboring hillsides they had invaded the university grounds, doing the work of a lawnmower in reducing the grass to proper shortness. When disturbed they throw their heads violently from side to side, at the same time emitting nasty, green masses of regurgitated food.

Swarms of the moths and dead specimens in the wash-up are not unusual during midsummer along the beaches of Long Island and New Jersey. These indicate migrations from the South. Such flights undoubtedly also take place in South America. A swarm reaching Ecuador in a wet year with its correspondingly luxuriant vegetation should find there a most favorable abiding place. In the tropical climate the moths would multiply rapidly, thus accounting for the hordes observed by Dr. Murphy.

A Correction.—In the Bulletin of the Brooklyn Entomological Society, Vol. XX, No. 5, page 211, Metcalf and Bruner described a new genus of Membracidae under the name "*Brachycentrus.*" This name, however, is already preoccupied by Brachycentrus, Curtis, 1834, a fact which we had overlooked until it was called to our attention by Dr. C. P. Alexander. We propose, therefore, the name "**Brachycentrotus**" for this genus.—Z. P. Metcalf, Raleigh, N. C.; S. C. Bruner, Havana, Cuba.